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AMENDMENTS TO THE DRAWINGS

None.

REMARKS

The Claim Amendments

Independent claim 5 has been amended to more particularly set forth the structure of the mounting flange of a pressure-actuable valve (e.g., outlet valve 38 shown in FIGS. 9, 11, and 12).

Independent claim 10 has been amended to more particularly set forth the structure of the pump housing retention structure for retaining the diaphragm mounting flange.

Independent claim 19 has been amended to more particularly set forth the structure of a pump diaphragm (e.g., pump diaphragm 34 shown in FIGS. 9 and 10).

The Examiner's Rejections of Claims 1-20 Are Overcome

--Claims 1-3

Claims 1-3 were rejected under 35 U.S.C. §102(b) as being anticipated by the U.S. Patent No. 5,271,531 to Rohr et al.

----The Rejection Of Claim 1 Is Overcome

In rejecting claim 1, the Examiner alleges (in the first paragraph, on page 3 of the Official Action) that FIGS. 3 and 4 of the Rohr et al. U.S. Patent No. 5,271,531 show a substantially "non-deformed" closed valve in contact with the valve restraint structure.

First of all, the Examiner has identified the valve restraint structure with the reference number 90 in lines 1 and 4 of the first paragraph on page 3 of the Official Action, and she probably meant to use the reference number 68.

More importantly, the Examiner may not appreciate that FIGS. 3 and 4 of the Rohr et al.

patent show a “deformed” valve 70 wherein the valve 70 is pressed down and deformed by the closed lid 40. In contrast, claim 1 of the instant patent application requires that the valve restraint structure (flat surface 130 and curved surface 132 in FIG. 16 of the instant application) contacts the valve head when the valve 38 is in the initial, substantially non-deformed, closed configuration as shown in FIG. 16. In the presently preferred form of the instant invention, there is no external lid which is pushing the valve head down against the restraint structure surfaces 130 and 132. The sixth line of claim 1 explicitly sets forth a “non-deformed” condition. In contrast, note that Rohr et al. even teaches away from such a non-deformed structure (see Rohr et al. at column 9, lines 38-44). In Rohr et al. when the lid 40 is open and the valve 70 is not deformed, the valve 70 does not contact the valve support member 68 (see FIG. 3 of Rohr et al.). Therefore, Rohr et al. does not teach the structure set forth in the instant application claim 1, and the rejection of claim 1 should be withdrawn. Such action is respectfully requested.

----The rejection Of Claim 2 Is Overcome

The Examiner rejects claim 2 over Rohr et al. The Examiner refers to Rohr et al. as showing, in FIG. 5, a valve head with a central flat surface. The Examiner refers to the annular surface around the inside of the Rohr et al. valve head (next to the valve cylindrical portion 96) as being the “central flat surface.” This seems preposterous. The instant application claim 2 does not set forth an annular surface--it sets forth a “central flat surface,” such as the surface 164 (see the instant application FIG. 14 and specification page 22, lines 28-30).

The Examiner further states that Rohr et al. show a restraint structure 68 which has a flat surface 76 for engaging the valve head central flat surface. There are two things wrong with that

allegation. First, as can be seen in FIG. 5 of the Rohr et al., the rigid surface 76 in Rohr et al. does not engage a central flat surface on the head of the valve 70. Secondly, the Rohr et al. restraint structure flat surface 76 cannot even engage the “annular” flat surface on the underside of the valve head to which the Examiner has mistakenly referred, and this is clear from FIG. 4 in Rohr et al. wherein the flat surface 76 is never in contact with any surface of the valve head-- even when the valve 70 is deformed under the closed lid 40. This is contrary to the structure set forth in the instant application claim 2. Therefore, claim 2 of the instant application is not anticipated by Rohr et al. Withdrawal of the rejection of claim 2 is respectfully requested.

----The Rejection Of Claim 3 Is Overcome

The Examiner rejects the instant patent application claim 3 by alleging that Rohr et al. show flow passages for accommodating flow against the valve interior side laterally beyond the valve head as required by claim 3. As can be seen in FIG. 16 of the instant patent application, the flow passages 140 are clearly located laterally beyond the valve head and do not accommodate flow directly against the interior side of the valve head. The flow is instead directed against the interior side of the valve along the valve skirt 154 laterally beyond the valve head.

In contrast, the Rohr et al. patent, in FIG. 5, shows that the flow comes in through the passages 80 and can impinge directly against the interior side of the curved valve head 92 because the valve head 92 is spaced away from the restraint structure 68 when the closure lid 40 is opened. This is contrary to the structure set forth in the instant application claim 3. Withdrawal of the rejection of claim 3 is respectfully requested.

----The Rejection Of Claim 4 Is Overcome

Claim 4, dependent upon claim 1, has been rejected. Claim 4 should be allowable for the same reasons that independent claim 1 is allowable. The withdrawal of the rejection of claim 4 is respectfully requested.

--The Rejection Of Claims 5-9 Is Overcome

The Examiner has also rejected the instant patent application claims 5-9 over the Rohr et al. patent as set forth in the Examiner's discussion on page 5 of the Official Action. Of claims 5-9, claim 5 is the only independent claim, and claims 6-9 depend directly or indirectly on independent claim 5.

Independent claim 5 of the instant patent application is specifically directed to some of the features of the cross-sectional shape of the valve flange as shown in FIG. 14 of the instant application. The Examiner is apparently confused about this, and refers to the Rohr et al. patent as showing a valve having a "sleeve (68)" with an extending "resilient material ring" 90--but neither the element 68 nor the element 90 is part of the flexible valve 70! The ring 90 in Rohr et al. is a separate, snap-fit retention ring. It is not part of the flexible valve sleeve 96. The difference between the invention set forth in the instant application claim 5 and the prior art Rohr et al. has been made even more clear by the current amendment to claim 5 which refers to the valve resilient material extending from the periphery of said sleeve "as a unitary extension of the sleeve."

In view of the fact that the Rohr et al. patent does not teach or suggest the structure set forth in amended claim 5, withdrawal of the rejection of independent claim 5 is respectfully

requested.

Further, in view of the fact that claims 6-9 are each directly or indirectly dependent upon independent claim 5 (as amended), each of those dependent claims includes all of the features of independent claim 5. Therefore, each of the dependent claims should be allowable for at least the same reasons as set forth above with respect to why independent claim 5 is allowable. Therefore, withdrawal of the rejections of claims 6-9 is respectfully requested.

--The Rejection Of Claims 10-14 Is Overcome

Independent claim 10 and its dependent claims 11-14 are directed to a pump comprising a pump housing 32 and a diaphragm 34 (see FIG. 3 in the instant patent application). Independent claim 10 sets forth a structure which includes, inter alia, the structure shown in FIG. 10 of the instant patent application wherein the housing has a projecting wall 72 with a lateral surface 112 and an end surface 110 wherein the end surface 110 is spaced from the diaphragm connecting member 58 and wherein the projecting wall lateral surface 112 is spaced from the diaphragm mounting flange second surface 92 when the pump is not pressurizing the fluid. On page 7 of the Official Action, the Examiner cites the prior art Maddox U.S. Patent No. 6,216,916 as showing a retention wall 51b (FIG. 8). However, as can be seen in the Maddox patent FIG. 6 cross-sectional view, the diaphragm flange 61 and the diaphragm connecting member (unnumbered) are both in surface-to-surface contact with the housing base 51 and with the retaining ring 100. Neither the retaining ring 100 nor the housing base 51 has any kind of projecting wall defining (1) a "lateral surface" spaced from the diaphragm flange, and (2) an "end surface" spaced from

the diaphragm connecting member. The advantages of the shape and spacing of the instant invention pump housing projecting wall 72 is described in detail on pages 17 and 18 of the instant patent application.

The Examiner appears not to have appreciated the nature of the structure being set forth in independent claim 10 and/or the very different structure disclosed in the Maddox et al. patent. The Maddox et al. patent specifically shows, in FIG. 6, how the Maddox et al. pump housing retention structure has a projecting wall that does not have an end surface spaced from the diaphragm connecting member and that does not have a lateral surface spaced from the adjacent diaphragm mounting flange surface.

Independent claim 10 has been amended herein to make this even more clear by defining the diaphragm retention structure projecting wall lateral surface as “facing towards said diaphragm connecting member,” and as defining the pump housing retention structure projecting wall end surface as “facing toward said diaphragm mounting flange second surface.” Thus, it is even more clear that (1) there must be spacing between the pump housing retention structure projecting wall “lateral surface” and the diaphragm mounting flange second surface when the pump is not pressurizing the fluid, and (2) there must be spacing between the pump housing retention structure projecting wall “end surface” and the diaphragm connecting member when the pump is not pressurizing the fluid.

In view of the fact that Maddox et al. do not teach or suggest the novel structure set forth in claim 10, and do not teach or suggest the advantages that this structure provides (as set forth in the instant application on pages 17 and 18), the Examiner is requested to

withdraw the rejection of independent claim 10, as amended, as anticipated by Maddox et al.

Claims 11-14 are each directly dependent upon independent claim 10 discussed above. Therefore, dependent claims 11-14 should be allowable for at least the same reasons that independent claim 10 is allowable. Accordingly, withdrawal of the rejections of dependent claims 11-14 is respectfully requested.

--The Rejection Of Claims 15-18 Is Overcome

Independent claim 15 of the instant patent application is directed to the structure of the pump diaphragm which has a pressurizing portion, a stress isolation connecting member (e.g., member 58 in FIG. 10 of the instant patent application), and a mounting flange (e.g., flange 60 in FIG. 10) that extends from the stress isolation connecting member. Claim 15 further requires that the stress isolation connecting member have a non-linear cross-sectional configuration (e.g., the arcuate shape for member 58 shown in FIG. 10 of the instant patent application). The advantages of the arcuate connecting member 58 are described on pages 18 and 19 of the instant patent application.

The Examiner refers on page 8 of the Official Action to the perspective view in FIG. 8 of Maddox et al. as showing prior art diaphragm stress isolation connecting member 101 with an arcuate cross section. If one looks at the cross-sectional views in Maddox et al., such as FIG. 6, one does not see any arcuate cross section for the connecting member. Indeed, the connecting member between the pressurizing diaphragm 60 and the flange 61 is shown to be entirely straight (FIGS. 5 and 6)!

In view of the fact that the Maddox et al. patent wholly fails as an effective reference to

teach or suggest the novel, non-linear stress isolation connecting member configuration set forth in independent claim 15, it is believed that independent claim 15 sets forth subject matter which is patentable over Maddox et al. Accordingly, withdrawal of the rejection of independent claim 15 is respectfully requested.

Claims 16-18 are each directly or indirectly dependent upon independent claim 15 discussed above. Dependent claims 16-18 should thus be allowable for at least the same reasons that independent claim 15 is allowable. Accordingly, withdrawal of the rejections of dependent claims 16-18 is respectfully requested.

--The Rejections Of Claims 19 And 20 Are Overcome

The instant patent application independent claim 19 is directed to some of the structural features of the pump diaphragm mounting flange as shown in FIG. 10 of the instant patent application. In particular, claim 19 sets forth a structure that includes, inter alia, inner and outer diverging surfaces (e.g., 94 and 96 in FIG. 10), a first corner surface (e.g., 98 in FIG. 10), a laterally extending surface (e.g. 100 in FIG. 10), and a second corner surface (e.g., 102 in FIG. 10). These surfaces accommodate the deformation and bending of the pump housing retention walls 70 to provide a secure engagement of the diaphragm flange 60.

In applying Maddox et al. to reject claim 19, the Examiner refers to the Maddox et al. patent FIG. 8 as showing a mounting a flange 100. However, the element 100 is not the type of diaphragm mounting flange that is set forth in the instant patent application claim 19. The Examiner is confusing the Maddox et al. patent “retaining ring” 100 with the “resilient” mounting flange 60 of the instant invention as set forth in claim 19. Claim 19 has been amended

somewhat to make this claim feature even more clear. Claim 19 now sets forth the resilient material as being molded to define "a unitary member having" the features recited in subparagraphs A and B in claim 19 of the instant patent application.

In view of the fact that Maddox et al. clearly does not teach the use of a resilient material molded to define a unitary member that has the uniquely configured mounting flange with the various surfaces set forth in subparagraph (a)-(d) of subparagraph (B) of claim 19, claim 19 sets forth subject matter which is patentable over Maddox et al. Accordingly, withdrawal of the rejection of claim 19 over Maddox et al. is respectfully requested.

Claim 20 is directly dependent upon independent claim 19. Claim 20 is thus patentable over Maddox et al. for at least the same reasons that independent claim 19 is patentable over Maddox et al. Accordingly, withdrawal of the rejection of dependent claim 20 is respectfully requested.

It is believed that the entire application is now in condition for allowance, and such action is respectfully requested.

Respectfully submitted,

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